

**Amendments to the Drawings:**

The attached replacement drawing sheet makes changes to Figs. 16 and 17 and replaces the original sheet with Figs. 16 and 17.

Attachment: Replacement Sheet

**REMARKS**

Claims 1-19 are pending in this application. By this Amendment, claims 1-3, 5, 8, 9, 13 and 15 are amended, as is the specification and the Abstract. Figs. 16 and 17 are amended with by inclusion of a replacement drawing sheet containing those figures. Reconsideration of the application based on the above amendments and the following remarks is respectfully requested.

The Office Action, in paragraph 3, objects to Figs. 16 and 17. Specifically, the Office Action states that a legend, such as "Prior Art," should be added to these figures. Figs. 16 and 17 are amended by the inclusion of a replacement drawing sheet in order to obviate the objection. Withdrawal of the objection to the drawings is respectfully requested.

The Office Action, in paragraph 4, objects to the Abstract because it includes purported merits of the invention which, the Office Action, deems inappropriate. While not conceding the merits of this conclusion, Applicant amends the Abstract to obviate the objection in accordance with the helpful suggestions provided by the Examiner in the Office Action. Withdrawal of the objection to the Abstract is respectfully requested.

The Office Action, in paragraph 5, objects to the disclosure because of a number of informalities. The disclosure is amended to obviate the objection and in order to correct a number of additional informalities which Applicant's representative discovered in detailed review of the disclosure in preparation for filing this Amendment. Withdrawal of the objection to the disclosure is respectfully requested.

The Office Action, in paragraph 6, objects to claims 1-12 and 14-17 because of a series of informalities. Claims 1, 2, 5, 8 and 9 are amended in accordance with the helpful suggestions provided by the Examiner in the Office Action in order to obviate the objections. Withdrawal of the objection to claims 1-12 and 14-17 for informalities is respectfully requested.

The Office Action, in paragraphs 7 and 8, rejects claim 13 under 35 U.S.C. §101, and 35 U.S.C. §112, second paragraph, as reciting an improper definition of a process, and as being indefinite. Claim 13 is amended in order to obviate the rejections. Accordingly, reconsideration and withdrawal of the rejections of claim 13 under 35 U.S.C. §§101 and 112 are respectfully requested.

The Office Action, in paragraph 9, rejects claims 1, 2, 8 and 9 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,331,040 B1 to Yonekubo et al. (hereinafter "Yonekubo"). This rejection is respectfully traversed.

Yonekubo teaches an apparatus for driving an ink jet record head which includes a driving signal generation unit that generates a driving signal which includes a first driving pulse for causing a first ink droplet to spout from a nozzle and a second driving pulse for causing a second ink droplet to spout from a nozzle that is greater in size than the first ink droplet (Abstract). Yonekubo notes that it is extremely difficult to continuously and freely regulate the weight of ink in each spouted ink droplet and record the halftone (col. 1, lines 34-36). As such, Yonekubo seeks to provide an apparatus and a method for driving an ink jet record head that widens the variable range of recorded dot diameters (col. 2, lines 27-29). With reference to Fig. 1, the waveforms disclosed in Yonekubo more closely correspond to the waveforms depicted in Figs. 16 and 17 of this application ("the Prior Art") rather than those depicted in Figs. 2 and 3A-C of this application.

Yonekubo suffers from precisely the shortfall that is discussed at pages 1-3 of the disclosure of this application under the Description of Related Art. Specifically, the piezoelectric transducer in Yonekubo is driven by an approximate trapezoid square voltage waveform. Such a driving waveform ascends stepwise at its output end by a constant voltage  $\Delta V$  per a unit time  $\Delta T$ , as shown in Fig. 17 of this application. There is nothing in Yonekubo which teaches, or would have suggested to one of ordinary skill in the art, a plurality of

different variation amounts of voltages making up an information which relates to the inclination of the line-segmented-waveform. As variation in the amount of voltage in the line-segmented-waveform per a unit interval changes, a driving waveform is generated that has a curved shape to be applied to the piezoelectric transducer. The result is that expansion and contraction of the piezoelectric transducer becomes more gentle as increases in physical and thermal load are restricted (see, for example, page 4, lines 7-18 of the specification).

Claim 1 recites, among other features, an information which relates to an inclination value of a plurality of different line-segmented-waveforms in the memory ... wherein the information which relates to the inclination value contains information on a variation amount of voltage of the line-segmented-waveform per a unit interval. Yonekubo generates a driving waveform that ascends stepwise at its output end by a constant voltage per unit time. As such, Yonekubo cannot reasonably be read to teach, or even to have suggested, the combination of features recited in at least independent claim 1, and in like manner, in independent claims 2, 8 and 9.

Accordingly, reconsideration and withdrawal of the rejection of claims 1, 2, 8 and 9 under 35 U.S.C. §102(b) as being anticipated by Yonekubo are respectfully requested.

The Office Action, in paragraph 10, rejects claim 15 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,593,757 to Kashiwazaki et al. (hereinafter "Kashiwazaki"). This rejection is respectfully traversed. Claim 15 is amended from a "product-by-process" claim to a method claim. As such, Applicant respectfully submits that Kashiwazaki does not anticipate all of the features recited in claim 15.

Accordingly, reconsideration and withdrawal of the rejection of claim 15 under 35 U.S.C. §102(b) as being anticipated by Kashiwazaki are respectfully requested.

The Office Action, in paragraph 11, rejects claims 3, 4, 10 and 11 under 35 U.S.C. §103(a) as being unpatentable over Yonekubo in view of U.S. Patent No. 5,541,628 to Chang

et al. (hereinafter "Chang"). The Office Action, in paragraph 12, rejects claims 5, 6, 12 and 15-17 under 35 U.S.C. §103(a) as being unpatentable over Yonekubo in view of Kashiwazaki. The Office Action, in paragraph 13, rejects claims 5, 7, 12, 14 and 15 under 35 U.S.C. §103(a) as being unpatentable over Yonekubo in view of Kobayashi et al., "A novel RGB multicolor light-emitting polymer display," Synthetic Metals 110-112, Elsevier Science (2000) (hereinafter "the Kobayashi article"). The Office Action, in paragraph 14, rejects claims 18 and 19 under 35 U.S.C. §103(a) as being unpatentable over Yonekubo in view of Chang as applied to claims 10 and 11, and further in view of Kashiwazaki. These rejections are respectfully traversed.

Chang discloses an ink-jet type recording device that includes a drive signal generation circuit for generating a trapezoidal drive signal (Abstract).

Kashiwazaki discloses a process for producing a color filter (Abstract). Kashiwazaki is directed to providing a production process of a color filter which permits the optional formation of a black matrix having desired patterns in order that high definition color filters may be produced at lower cost (col. 2, lines 31-34). There is nothing in Kashiwazaki to suggest any particular waveform for driving the disclosed ink-jet system.

The Kobayashi article discusses a system for depositing light-emitting polymer for a green or a red emitter with a conventional ink jet head followed by spin-coating for an electron-transferring layer or a blue emitter (Abstract). The system disclosed in the Kobayashi article has successfully patterned electro luminescent layers on thin film transistor substrates using the ink jet process and displays a multicolor image using the thin film transistor -- light-emitting polymer display. Applicant respectfully submits that there is no specific waveform described for the system disclosed in the Kobayashi article.

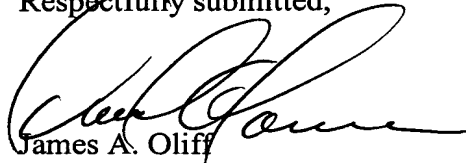
Based on the above disclosures, none of Chang, Kashiwazaki or the Kobayashi article, taken alone or in combination, overcomes the shortfall in the application of Yonekubo to any

of independent claims 1, 2, 8 or 9. As such, the varying combinations of applied references cannot reasonably be read to have suggested all of the combinations of features recited in those independent claims. Further, the subject matter of dependent claims 3-7, 10-14 and 16-19 is also neither taught, nor would it have been suggested, by the varying combinations of the applied references for at least the respective dependence of these claims directly and/or indirectly on independent claims 1, 2, 8 and 9. Accordingly, reconsideration and withdrawal of the rejection of claims 3-7, 10-12, 14 and 16-19 under 35 U.S.C. §103(a) as being unpatentable over the combinations of the applied references are respectfully requested.

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-19 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number set forth below.

Respectfully submitted,



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JAO:DAT

Attachments:

Amended Abstract

Replacement Drawing Sheet (Figs. 16 and 17)

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